

DROUGHT

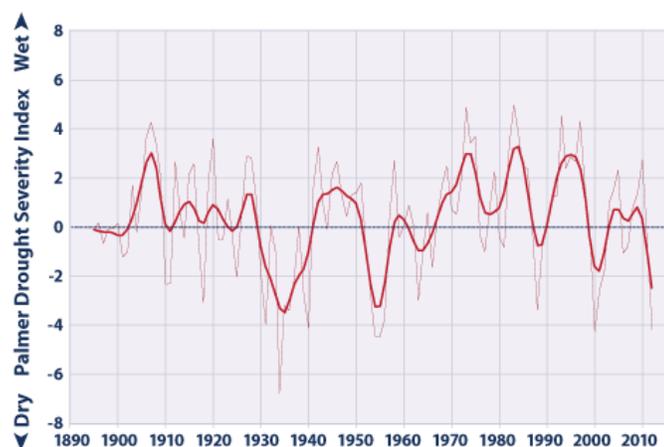
Congressional Hazards Caucus Alliance Factsheet

Drought is a natural hazard that can have far-reaching economic, social, and ecological impacts. Since 1980 alone the United States has experienced more than 15 major droughts, with economic impacts exceeding \$153 billion.¹ Due to drought's diffuse impacts, the federal responsibility for drought management and response is currently spread among several agencies.

CAUSES AND RISKS

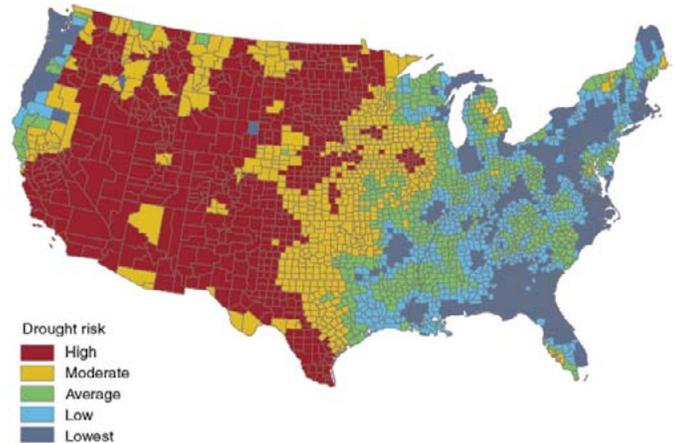
Drought is often triggered by a deficiency of precipitation relative to normal conditions. All regions of the US have some drought risk; since drought is relative, however, what constitutes severe drought for a state like Georgia may be normal for a state such as Arizona.

Extreme drought is part of natural climatic cycles around the world. Observations have related drought in some regions of the U.S. with variations in sea surface temperatures in the Pacific Ocean that promote the formation of dry high pressure systems over the U.S.



Above: The variability of average drought conditions across the lower 48 United States from 1895 to 2010.

Positive numbers represent years that are wetter than average; negative numbers present years that are drier than average. Credit: EPA (<http://www.epa.gov/climatechange/science/indicators/weather-climate/drought.html>)



Above: Average drought risk over the past century as measured by the Palmer Drought Severity Index, which uses temperature and precipitation data to estimate dryness.

Credit: USDA Economics Research Service (www.ers.usda.gov/amber-waves/2013-july/the-role-of-conservation-program-design-in-drought-risk-adaptation.aspx, accessed March 2014).

Historic records and prehistoric reconstructions extending back 1000 years document that extreme droughts have occurred repeatedly in North America, sometimes for longer periods than even the most severe droughts of the 20th century.² Research on climate variability is addressing how drought may impact the U.S. in the future.

DETECTION AND FORECASTING

The severity of drought for local areas can be difficult to forecast, as drought impacts depend not only on regional precipitation shortages, but also on societal water demand and the availability of local hydrological resources (soil moisture, groundwater, reservoirs, river flow).

The U.S. Drought Monitor (USDM) provides a weekly summary of current drought conditions. USDM is a collaborative effort between the National Drought Mitigation Center (NDMC) at University of Nebraska Lincoln,

1] National Climatic Data Center. (2013). "Billion-Dollar Weather/Climate Disasters." <http://www.ncdc.noaa.gov/billions/events>.

2] Folger, P., & Cody, B. A. (2014). Drought in the United States: Causes and Current Understanding. Congressional Research Service, www.crs.gov, RL43407. Available from <http://www.fas.org/sgp/crs/misc/R43407.pdf>.



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the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Department of Agriculture (USDA).

NOAA's Climate Prediction Center also publishes monthly and seasonal National Drought Outlooks. Drought outlooks are currently limited to 30-90 days in advance due to the complexity of long-range weather prediction.

Due to the variability of drought factors on different scales, drought identification relies on robust monitoring, coordination, and communication channels between decision-makers at all levels.

FEDERAL POLICY AND RESPONSE

National Integrated Drought Information System, www.drought.gov

Drought monitoring and early warning is coordinated in the U.S. through the National Integrated Drought Information System (NIDIS). Congress reauthorized NIDIS in February 2014 in order to "better inform and provide for more timely decision-making to reduce drought related impacts and costs."

NIDIS is overseen by NOAA in collaboration with several other federal agencies that monitor meteorological, hydrological, and agricultural inputs that relate to drought.

National Drought Resilience Partnership, www.drought.gov/drought/content/ndrp

The National Drought Resilience Partnership was founded in late 2013 in order to improve interagency collaboration and provide a single point of contact for members of the public seeking assistance with drought preparedness and response. The partnership includes the Department of Commerce/NOAA, USDA, Department of Commerce, Department of the Interior, Department of Energy, Federal Emergency Management Agency, and U.S. Army Corps of Engineers.

Federal Drought Response and Recovery Authorities

The U.S. Army Corps of Engineers and Bureau of Reclamation have various authorities to intervene in providing

water supplies during times of drought.³ USDA's Farm Service Agency and Risk Management Agency also exercise multiple authorities to provide financial and technical assistance to farmers and ranchers in times of drought. See Congressional Research Service Report 21212 for a discussion of crop insurance programs.

IS THERE A LINK BETWEEN CLIMATE CHANGE AND DROUGHT?

Climate is inherently variable, and no single drought event can currently be attributed to climate change. A significant number of scientific studies have indicated that climate change is likely to modify the distribution of precipitation around the globe, but regional impacts are not as certain. Nevertheless, rising overall temperatures are likely to intensify the effects of drought where it occurs.

ADDITIONAL RESOURCES

Congressional Research Service Report: "Drought in the United States: Causes and Current Understanding"

www.fas.org/sfp/crs/misc/R43407.pdf

National Drought Mitigation Center drought.unl.edu

United States Drought Monitor droughtmonitor.unl.edu

National Drought Outlooks www.cpc.ncep.noaa.gov/products/Drought

Drought Impact Report droughtreporter.unl.edu

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[3] Carter, N. T. (2014). Emergency Water Assistance During Drought: Federal Non-Agricultural Programs. Congressional Research Service, www.crs.gov, RS43408. Available from <http://www.ece.uprm.edu/>